



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,477	07/19/2000	Shunpei Yamazaki	0756-2178	1881

31780 7590 02/28/2003

ERIC ROBINSON
PMB 955
21010 SOUTHBANK ST.
POTOMAC FALLS, VA 20165

EXAMINER

KIELIN, ERIK J

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 02/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/619,477

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

Erik Kielin

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-56 is/are pending in the application.
- 4a) Of the above claim(s) 1-10, 12-30 and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-53, 55 and 56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of the species of Group IV, claims 31-53, 55 and 56 in Paper No. 13 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

As a first note, Examiner agrees with Applicant that newly added claim 54 belongs with the species of Group III because of its dependency from claim 19.

While it is noted that Applicant has made significant amendments to independent claim 1, claims 1-9 are not generic to all species, as asserted by Applicant. First, independent claim 1 requires neither a thin film transistor nor a circuit as required in claim 19. Moreover, claim 19 does not require a second substrate. For at least these reasons, independent claim 1 is not generic. Moreover, claim 1 is not necessarily a semiconductor device, which makes the search for independent claim 1 different from that for the other species which must be a semiconductor device. This places an undue burden on Examiner to search and examine thoroughly.

Moreover, it is noted that Applicant cannot, as a matter of right, place a provisional contingency upon an election, such as the following: "Applicant hereby provisionally elects species IV **under the condition that species I, as recited in claim 1 as amended herewith, is generic to species II, III, and IV...**" as stated on p. 7 of the Amendment filed 16 December 2002. (Emphasis added.) Claims 1 is not generic, for reasons just indicated, and Applicant has elected the species of Group IV. Accordingly, these claims will be examined and the others withdrawn from further consideration.

Art Unit: 2813

2. Claims 1-10, 12-30, and 54 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim.
3. Accordingly, claims 31-53, 55 and 56 are active and will be examined.

Claim Objections

4. Claims 36, 37, 38, 40, 41, 45, 47, 48, 49, 51, and 52 are objected to because of the following informalities:

Claims 36, 37, 38, 40, and 41 recite the limitation "A contact structure of claim 31..." in the preamble, but the preamble of independent claim 31 recites, "A semiconductor device" -- not a contact structure. This appears to be a typographical error --especially since the original claims recited "A semiconductor device." The same problem applies to claims 45, 47, 48, 49, 51, and 52, which depend from independent claim 43.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 34 and 45 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Art Unit: 2813

The last sentence of page 3 of the specification, regarding the problem of the prior art use of resin in contact with the metal wiring, states "Furthermore, the side surface of the metallic film 3a is touching the resin in a state where the FPC 4 is mounted, causing a **problem** in protecting against moisture." (Emphasis added.) The next sentence (first sentence on p. 4) states, "The present invention has been made to solve the above-mentioned **problems**..." (Emphasis added.) Therefore, the specification indicates that resin should **not** be used as the "protecting film" or "insulating film" in contact with the side of the metal which --according to Applicant-- will not protect against moisture, contrary to Applicant's indicated objective of protecting the metal film against corrosion as this is a "problem" which Applicant clearly states is desired to be solved.

Furthermore, the metals indicated in the specification for use as the metal film, for example, molybdenum (Mo) and tungsten (W) are notoriously well known to those of ordinary skill to be easily corroded by moisture; thereby supporting the fact that resin will not protect such metal films. For further verification of this see US 6,043,859 (Maeda) at col. 4, ll. 19-27. For this reason, the use of a resin as a protecting film is not enabled because it does not provide the requisite protection, as admitted by Applicant, and as known in the art.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims **31-35, 39, 42, 55** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,169,593 B1 (**Kanaya et al.**) in view of JP 9-251996 (**Yamazaki et al.**).

Regarding claim **31**, **Kanaya** discloses a liquid crystal display --as further limited by instant claim **42**-- comprising a first substrate **20** having a circuit structured with a thin film transistor (TFT); a second substrate (Fig. 4A called "ICs for driving the gate electrode") opposing said first substrate **20**; a connecting wire formed of a metallic film **22** (gate signal wire; col. 8, lines 25-29) and a transparent conductive film (TCF) **28** (source signal wire; col. 8, ll. 50-51) in contact with the metallic film surface for connecting said circuit structured with a TFT to another circuit; and a protecting film **24** in contact with a side surface of said metallic film and formed along the length and width direction of the lamination film, wherein said connecting wiring and said protecting film **24** are formed over said first substrate **20**. (See Figs. 2G and 2H; col. 9, ll. 13-40. See also col. 18, ll. 24-51 and Figs. 15A-15B.) Note that the protecting film **24** is the same film insulating between **22** and **28** as shown in Fig. 2F --as further limited by instant claim **32**).

In another embodiment as shown in Figs. 7E-7F, **Kanaya** discloses the metal film **26** of about 300 nm (col. 13, lines 37-40) with overlying TCF **28** of a thickness of about 70 nm (col. 9, line 25) --as further limited by instant claim **35**-- and protecting film **30** formed of, for example, an acrylic resin -- as further limited by instant claim **34**-- and formed along the length and width direction of the lamination film and contacting a side surface of the metal film **26**. (See also col. 14 -- esp. ll. 7-10, 45-67; Figs 12D, 13B.)

Kanaya does not teach that the wiring has a tapered shape.

Art Unit: 2813

Yamazaki teaches that contact holes are conventionally required to be tapered to improve the step coverage of upper-layer wiring lines at contact holes (paragraph [0003] first sentence).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to form the connecting wiring of **Kanaya** to have a tapered shape, as taught in **Yamazaki** because **Yamazaki** teaches that tapering is conventional and required to improve step coverage.

Regarding claim 33, **Kanaya** shows the connection wiring is connected to a wiring **19** (Fig. 2H; also called “output terminal” in Figs. 4A-4B) of a third substrate **21** via an anisotropic conductive film **80a**.

Regarding claim 55, **Kanaya** discloses the lamination film is formed of the same materials as the source and drain wiring. (See col. 13, lines 32-36 and especially the paragraph bridging cols. 14-15.)

9. Claims **31-33**, **35-37**, **42**, **55** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,636,329 (**Sukegawa** et al) in view of JP 9-251996 (**Yamazaki** et al.).

The prior art Fig. 2A-2C of **Sukegawa** showing a terminal portion of an LCD display discloses a first substrate **1** having a circuit structured with a thin film transistor (TFT); a second substrate (called the “color filter substrate **200**” Fig. 3A; col. 5, lines 27-44) opposing said first substrate **1**; a connecting wire formed of a metallic film **7** and a transparent conductive film (TCF) **8** of 40 nm thick (col. 5, lines 6-10) in contact with the metallic film surface for connecting said circuit structured with a TFT to another circuit using an anisotropic conductive film (ACF) **10**; and a protecting film **3** in contact with a side surface of said metallic film **7**,

Art Unit: 2813

wherein said connecting wiring and said protecting film 7 is formed over said first substrate 1 and formed along the length and width direction of the lamination film. (See also col. 3, ll. 9-33 and prior art Figs. 1A-1B.)

Fig. 4A-4B of **Sukegawa** discloses a first substrate 1 having a circuit structured with a thin film transistor (TFT); a second substrate 200 opposing said first substrate 1; a connecting wire formed of a metallic film 7 formed 140 nm thick from Cr, Al, W, etc. (col. 8, ll. 59-63) and a transparent conductive film (TCF) 8 in contact with the metallic film surface for connecting said circuit structured with a TFT (Fig. 3C) to another circuit using an anisotropic conductive film (ACF) 10; and a protecting film 3 in contact with a side surface of said metallic film 7, wherein said connecting wiring and said protecting film 7 are formed over said first substrate 1, and formed along the length direction of the lamination film. Note also that at col. 7, ll. 40-44, **Sukegawa** states, "That is, the upper layer metal wiring 7 is protected at least by double coverage with a transparent conductive film 10 and further protected, locally, by coverage with a protective insulation film 9. (See also col. 3, ll. 9-33 and prior art Figs. 1A-1B.)

Sukegawa does not teach that the wiring has a tapered shape.

Yamazaki teaches that contact holes are conventionally required to be tapered to improve the step coverage of upper-layer wiring lines at contact holes (paragraph [0003] first sentence).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to form the connecting wiring of **Sukegawa** to have a tapered shape, as taught in **Yamazaki** because **Yamazaki** teaches that tapering is conventional and required to improve step coverage.

Art Unit: 2813

Regarding claim 33, **Sukegawa** discloses the connection wiring is connected to a wiring **31a, 31b** of a third substrate via an anisotropic conductive film (Fig. 3E).

Regarding claim 55, **Sukegawa** discloses the lamination film is formed of the same materials as the source and drain wiring. (See Fig. 3C and associated text.)

10. Claims **31-33, 35-37, 39, 42, 55** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,608,559 (**Inada et al.**) in view of JP 9-251996 (**Yamazaki et al.**).

The prior art Fig. 2 of **Inada**, showing a terminal portion of an LCD panel, discloses a first substrate **221** having a circuit structured with a thin film transistor (TFT); a second substrate opposing said first substrate **204** which is a flexible wiring substrate; a connecting wire formed of a 300-nm thick metallic film **209** formed at and a 80-nm thick transparent conductive film (TCF) **210** in contact with the metallic film surface for connecting said circuit structured with a TFT to another circuit using an anisotropic conductive film (ACF) **211**; and a protecting film **211** in contact with a side surface of said metallic film **209**, wherein said connecting wiring and said protecting film **211** are formed over said first substrate **221**. (See col. 1, ll. 29-34.)

Fig. 6 of **Inada** discloses a similar embodiment to the prior art figure but shows the protective film **42** of silicon nitride on the side of, and formed along the length and width direction of, the lamination film formed of the 300-nm thick metal film **29** with overlying 80-nm thick transparent conductive film **30** and anisotropic conductive film **36** (col. 8, ll. 50-51). (See also col. 7, ll. 10-30; col. 14, ll. 32-42; col. 4, ll. 24-34).

Inada does not teach that the wiring has a tapered shape.

Yamazaki teaches that contact holes are conventionally required to be tapered to improve the step coverage of upper-layer wiring lines at contact holes (paragraph [0003] first sentence).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to form the connecting wiring of **Inada** to have a tapered shape, as taught in **Yamazaki** because **Yamazaki** teaches that tapering is conventional and required to improve step coverage.

Regarding claim 32, **Inada** discloses that protective film **310** between source/drain wiring is that same as protective film **42** which are each SiN (Fig. 14; col. 14, lines 32-42).

Regarding claim 33, **Inada** discloses the connection wiring is connected to a wiring **35** of a third substrate **33** via an anisotropic conductive film **36** (Fig. 6).

Regarding claim 55, **Inada** discloses the lamination film is formed of the same materials as the source and drain wiring. (See Fig. 14 and associated text.)

11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over any of **Kanaya** in view **Yamazaki**, **Sukegawa** in view **Yamazaki**, and **Inanda** in view **Yamazaki**, each as applied to claim 31 above, and further in view of US 5,821,159 (**Ukita**).

Each of **Kanaya** in view **Yamazaki**, **Sukegawa** in view **Yamazaki**, and **Inanda** in view **Yamazaki**, as explained above, teaches each of the features of the claims except for forming the metallic film as a laminate of tungsten W and tungsten nitride compound WN_x . **Kanaya** does however teach an example of another refractory metallic film as a laminate of tantalum/tantalum nitride or Ta/TaN (col. 17, ll. 44-48).

Art Unit: 2813

Ukita discloses that it is known in the LCD art to make a metallic film for an interconnection wiring as a laminate of a tungsten and its nitride (col. 4, lines 21-25). It has been held that selection of a known material based on its suitability for its intended use is *prima facie* obvious. See Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re LESHIN, 125 USPQ 416 (CCPA 1960).

It would have been obvious to one of ordinary skill at the time of the invention to use a tungsten and its nitride to form the metallic film of any of **Kanaya**, **Sukegawa**, and **Inada** as taught in **Ukita** because, in the case of **Kanaya**, **Kanaya** discloses a similar laminate of another refractory metal and because tungsten and its nitride would be expected to work just as well as the other metallic films for interconnect wiring, according to precedent.

12. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of **Kanaya** in view **Yamazaki**, **Sukegawa** in view **Yamazaki**, and **Inanda** in view **Yamazaki**, each as applied to claim 31 above, and further in view of US 6,215,077 B1 (**Utsumi et al.**).

Each of **Kanaya** in view **Yamazaki**, **Sukegawa** in view **Yamazaki**, and **Inanda** in view **Yamazaki**, as explained above, teaches each of the features of the claims except for forming the transparent conductive film from zinc oxide and compounds of zinc oxide and indium oxide.

Utsumi teaches the benefits of using a laminate of a metallic film 2b, 2c comprising aluminum layer 2b with overlying IZO 2a specifically for use on transparent substrates for LCDs. (See Abstract, col. 2, l. 45 to col. 3, l. 16; and especially col. 4, ll. 49-58.)

Art Unit: 2813

It would have been obvious to one of ordinary skill at the time of the invention to use the metallization scheme of **Utsumi** for the reasons in **Utsumi** -- at least to form a metallization free from hillocks which has a low resistance even though it incorporates a conductive metal oxide.

Moreover, it has been held that selection of a known material based on its suitability for its intended use is *prima facie* obvious. See Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re LESHIN, 125 USPQ 416 (CCPA 1960). It would have been obvious to one of ordinary skill at the time of the invention to use zinc oxide or zinc oxide and indium oxide to form the transparent conductive film of any of **Kanaya**, **Sukegawa**, and **Inada** as taught in **Utsumi** because either material would be expected to work just as well as the transparent conductive films of each of **Kanaya**, **Sukegawa**, and **Inada** for interconnect wiring, according to precedent.

13. Claims 43-46, 50, 53, 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanaya** in view of **Yamazaki** and JP 8-234212 A (**Hioki**).

Kanaya in view of **Yamazaki**, as explained above, teaches each of the features of the claims except for forming column-shaped spacers over the TFTs, wherein the material used to form the spacers is the same material as that used to form the protective film.

Hioki teaches the benefits of forming column-shaped spacers 24 over the TFTs 22 using a resin. It would have been obvious to one of ordinary skill at the time of the invention to form spacers over the TFTs of **Hioki** and form them from resin for the reasons indicated in **Hioki** -- especially because forming the spacers over the TFTs provides uniform light over the pixels.

Art Unit: 2813

Because **Kanaya** teaches embodiments wherein the protecting film material is made from resin, both the spacers and the protecting film are formed from the same material.

14. Claims **43**, **44**, **46-48**, **53**, **56** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sukegawa** in view of **Yamazaki** and **Hioki**.

Sukegawa in view of **Yamazaki**, as explained above, teaches each of the features of the claims except for forming column-shaped spacers over the TFTs, wherein the material used to form the spacers is the same material as that used to form the protective film.

Hioki teaches the benefits of forming column-shaped spacers **24** over the TFTs **22** using a resin. It would have been obvious to one of ordinary skill at the time of the invention to form spacers over the TFTs of **Hioki** and form them from resin for the reasons indicated in **Hioki** -- especially because forming the spacers over the TFTs provides uniform light over the pixels.

Because **Sukegawa** teaches embodiments wherein the protecting film material is made from resin, both the spacers and the protecting film are formed from the same material.

15. Claim **49** is rejected under 35 U.S.C. 103(a) as being unpatentable over any of **Kanaya** in view **Yamazaki** and **Hioki**, **Sukegawa** in view **Yamazaki** and **Hioki**, and **Inanda** in view **Yamazaki** and **Hioki**, each as applied to claim **43** above, and further in view of US 5,821,159 (**Ukita**).

Each of **Kanaya** in view **Yamazaki** and **Hioki**, **Sukegawa** in view **Yamazaki** and **Hioki**, and **Inanda** in view **Yamazaki** and **Hioki**, as explained above, teaches each of the features of the claims except for forming the metallic film as a laminate of tungsten W and

Art Unit: 2813

tungsten nitride compound WN_x . **Kanaya** does however teach an example of another refractory metallic film as a laminate of tantalum/tantalum nitride or Ta/TaN (col. 17, ll. 44-48).

Ukita discloses that it is known in the LCD art to make a metallic film for an interconnection wiring as a laminate of a tungsten and its nitride (col. 4, lines 21-25). It has been held that selection of a known material based on its suitability for its intended use is *prima facie* obvious. See Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re LESHIN, 125 USPQ 416 (CCPA 1960).

It would have been obvious to one of ordinary skill at the time of the invention to use a tungsten and its nitride to form the metallic film of any of **Kanaya**, **Sukegawa**, and **Inada** as taught in **Ukita** because, in the case of **Kanaya**, **Kanaya** discloses a similar laminate of another refractory metal and because tungsten and its nitride would be expected to work just as well as the other metallic films for interconnect wiring, according to precedent.

16. Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of **Kanaya** in view **Yamazaki** and **Hioki**, **Sukegawa** in view **Yamazaki** and **Hioki**, and **Inanda** in view **Yamazaki** and **Hioki**, each as applied to claim 43 above, and further in view of US 6,215,077 B1 (**Utsumi et al.**).

Each of **Kanaya** in view **Yamazaki** and **Hioki**, **Sukegawa** in view **Yamazaki** and **Hioki**, and **Inanda** in view **Yamazaki** and **Hioki**, as explained above, teaches each of the features of the claims except for forming the transparent conductive film from zinc oxide and compounds of zinc oxide and indium oxide.

Art Unit: 2813

Utsumi teaches the benefits of using a laminate of a metallic film 2b, 2c comprising aluminum layer 2b with overlying IZO 2a specifically for use on transparent substrates for LCDs. (See Abstract, col. 2, l. 45 to col. 3, l. 16; and especially col. 4, ll. 49-58.)

It would have been obvious to one of ordinary skill at the time of the invention to use the metallization scheme of **Utsumi** for the reasons in **Utsumi** -- at least to form a metallization free from hillocks which has a low resistance even though it incorporates a conductive metal oxide.

Moreover, it has been held that selection of a known material based on its suitability for its intended use is *prima facie* obvious. See Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re LESHIN, 125 USPQ 416 (CCPA 1960). It would have been obvious to one of ordinary skill at the time of the invention to use zinc oxide or zinc oxide and indium oxide to form the transparent conductive film of any of **Kanaya**, **Sukegawa**, and **Inada** as taught in **Utsumi** because either material would be expected to work just as well as the transparent conductive films of each of **Kanaya**, **Sukegawa**, and **Inada** for interconnect wiring, according to precedent.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 4-133027 A (**Yamazaki** et al.) teaches the use of zinc oxide and compounds of zinc oxide and indium oxide to form transparent conductive wiring for an optical display device (Abstract).

Art Unit: 2813

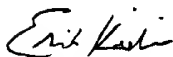
JP 9-213968 (**Chiyou**, assigned to **Semiconductor Energy Lab.**) and US 5,849,611 (**Yamazaki et al.**) each disclose the methods and benefits of forming a tapered wiring structure.

US 5,648,674 (**Weisfield et al.**; col. 2, lines 40-46), US 5,208,690 (**Hayashi et al.**; Figs. 7 and 8 and associated text), US 5,835,177 (**Dohjo et al.**; at least Fig. 3), US 5,734,458 (**Ikubo et al.**), and US 6,226,060 B1 (**Onisawa et al.**) each teaches the methods and benefits of forming a tapered wiring structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Erik Kielin
February 21, 2003